Precalc Warm Up #13-1

1. Rationalize the denominator $\frac{6}{\sqrt[3]{2}}$

2. Expand $(4x - 2)^3$

3. Graph $y = 2|x - 5| + 3$

4. Find the domain and range of $y = \frac{2}{x} - 10$

5. Given $f(x) = x^2 - 6x - 10$, find $f(x - 4) - f(-2)$

d: $[5,\infty)$
r: $[0,\infty)$ $\mathbb{R}$

6. $f(x) = \sqrt{x-5}$ and $g(x) = 2x$. Find $f(g(x))$ and $g(f(x))$

$f(g(x))$?
$r_g \subseteq d_f$
$\mathbb{R} \not\subseteq [5,\infty)$
$f(g(x))$ Does not exist

$g(f(x))$?
$r_f \subseteq d_g$
$[0,\infty) \subseteq \mathbb{R}$ ✓
$g(\sqrt{x-5})$
$g(f(x)) = 2\sqrt{x-5}$
d: $[5,\infty)$

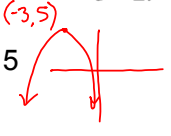
7. y is directly proportional to x and y = 40 when x = 6. Find the constant of proportionality.

8. Write in standard form, and graph. $y = -2x^2 - 6x + 11$
(vertex form)

9. Divide $(10x^3 - 9x^2 + 7x + 5)$ by $(5x - 2)$

10. Divide. Express answer in standard form $\frac{4}{3 - 2i}$

11. Find the range of $f(x) = -(x+3)^2 + 5$

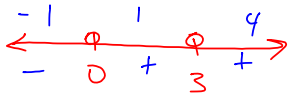


r: $y \leq 5$

12. Find the solution interval(s):

$x^3 - 6x^2 + 9x > 0$ → $x(x^2 - 6x + 9) > 0$
$x(x-3)^2 > 0$
+

positive product
critical #'s 0, 3 test



$(0,3) \cup (3,\infty)$

Exponent Review:

1) $\frac{2^n - 6^n}{1 - 3^n} = \frac{2^n - (2\cdot 3)^n}{1 - 3^n} = \frac{2^n - 2^n \cdot 3^n}{1 - 3^n} = \frac{2^n(1 - 3^n)}{1 - 3^n}$

2) $\frac{(-a)^3 \times a^{-3}}{(b^{-1})^{-2} b^{-3}}$

3) $\frac{(-2)^3 \times 2^{-3}}{(x^{-1})^2 \times x^2}$ $\frac{(-1)(2)^3(2)^{-3}}{x^{-2}\cdot x^2} = \frac{-1(2)^0}{x^0}$

4) $\frac{x^{-1} - y^{-1}}{x^{-1}y^{-1}}$ $\frac{\frac{1}{x} - \frac{1}{y}}{\frac{1}{xy}}$ $\left(\frac{1}{x} - \frac{1}{y}\right)\cdot \frac{xy}{1}$ $y - x$

5) $\frac{b^{n+1} \times 8a^{2n-1}}{(2b)^2 (ab)^{-n+1}}$

$\frac{8 \cdot a^{2n-1} \cdot b^{n+1}}{4 \cdot a^{(-n+1)} \quad b^2 \cdot b^{-n+1}}$

$2 \cdot a^{2n-1-(-n+1)} \cdot \frac{b^{n+1}}{b^{-n+3}}$

$2a^{3n-2} \cdot b^{n+1-(-n+3)}$

$2a^{3n-2} b^{2n-2}$

Final Exam Rev WS #1 Answers:

1a) $2x^2 + 5x + 7 + \frac{26}{2x-3}$

b) $2x^2 + 7x + 10 + \frac{11x - 21}{x^2 - 2x + 2}$

2a) $r = 105$ b) $f(2) = 105$

c) $r = -15$ d) $f(-4) = -15$

3) $(x-2)(x+3)(x-3)$

4a) $\frac{16}{13} + \frac{15}{13}i$ b) 1

c) $\frac{3\sqrt{2} - 2}{7}$ d) $-2\sqrt{10}$

5) $S_{1250} = 2,345,625$

6a) $h = 3$ $k = 1$

b) $a = 2$

c) $y = 2x^2 - 12x + 19$ $y = 2(x-3)^2 + 1$

7ai) $A = \frac{4}{3}$ ii) $B = -4$

b) $A_\Delta = \frac{8}{3}$

8) $k = \frac{9}{4}$

9a) 1730 m b) 50,180 m

10a) 4 b) $t \approx 4.90$ hrs.

Final Exam Rev WS #1 Answers:

11ai) $p = 2$ ii) $q = 10$

b) Reflect in x-axis

12a) $P \approx 1,536,101$ people

b) 28% growth

c) $n > \approx 20.7 \rightarrow 21$ yrs. by 2015

14a) as $x \to -\infty$, $f(x) \to \infty$
as $x \to \infty$, $f(x) \to \infty$

b) as $x \to -\infty$, $f(x) \to \infty$
as $x \to \infty$, $f(x) \to -\infty$

c) as $x \to -\infty$, $f(x) \to -\infty$
as $x \to \infty$, $f(x) \to -\infty$

15) $x = 2, 8$

16) $x = 3$; $y = -9$

17a) center $(4, -1)$ $r = \sqrt{3}$

b) center $(-\frac{5}{2}, 3)$ $r = \frac{\sqrt{73}}{2}$

18a) 23 b) $6x^2 - 7$

Final Exam:

Covers: PC 1, 2, 3

SL 2, 5, 6, 8

You may use your own grapher and one page of notes. Notes must be hand written and can be front and back. You may not leave during the final so bring something to do if you finish early.